

Invasive Species and Aviation in Micronesia



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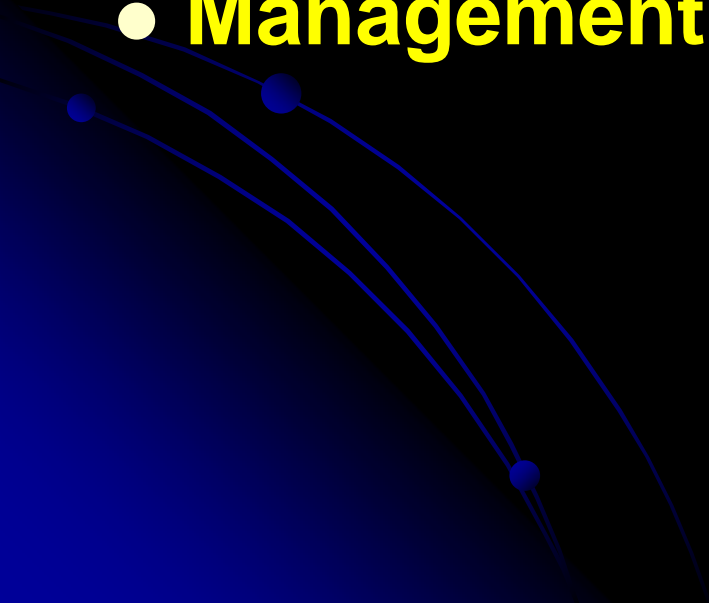


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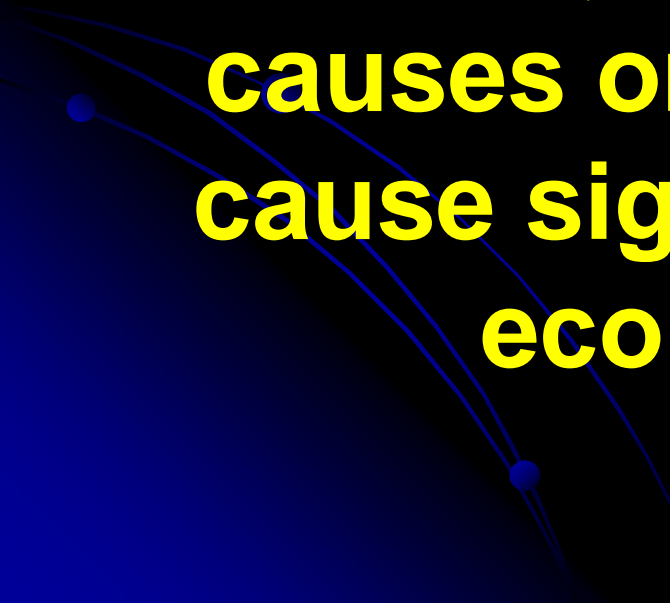
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OUTLINE

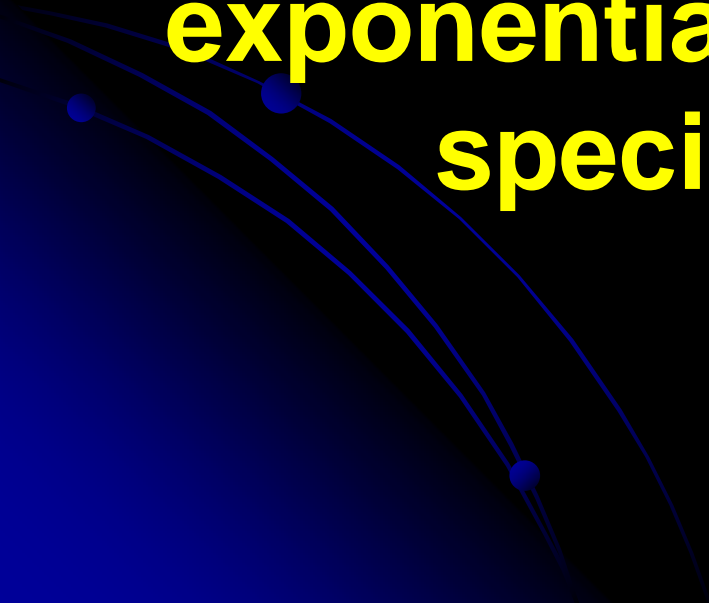
- **Background & concepts on invasive species**
 - **Three selected examples of regional importance**
 - **Management response**
- 

Invasive Species (def):

A species that is not indigenous to a given region that, once established, causes or has the potential to cause significant economic or ecological damage



Rapid increases in global commerce, coupled with more efficient transportation means, has caused worldwide and exponential growth in invasive species movements



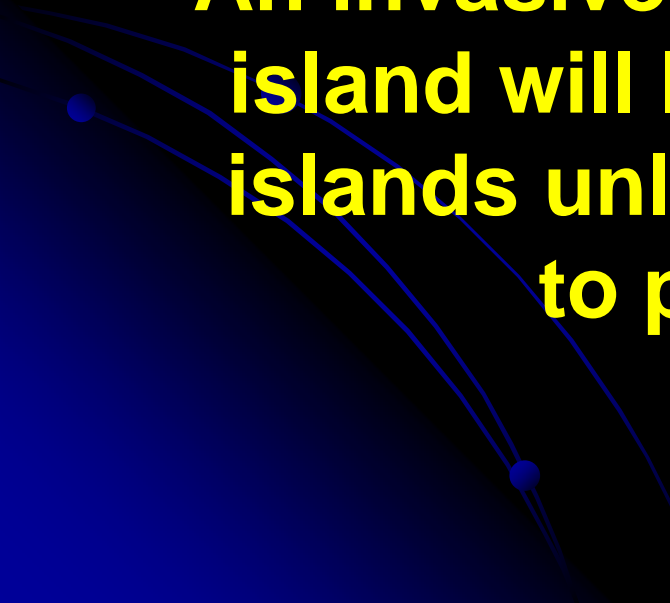
Invasive Species Impacts

- **Loss of biodiversity/Extinctions**
- **Disease**
- **Agricultural damages**
- **Other economic damages**
- **Quality of life**
- **Trade restrictions**



**Invasive species are now considered
the second leading cause of
worldwide biodiversity loss (behind
only habitat loss)**

**An invasive that impacts one regional
island will likely impact neighboring
islands unless there is management
to prevent its spread**



Invasive species means of arrival

- **Accidental transportation**
 - Via cargo, cargo vessels, or other human-mediated fomite
- **Intentional transportation**
 - Smuggling
 - Pet trade (includes vectoring)
 - Eco-terrorism
- **Self-dispersal**



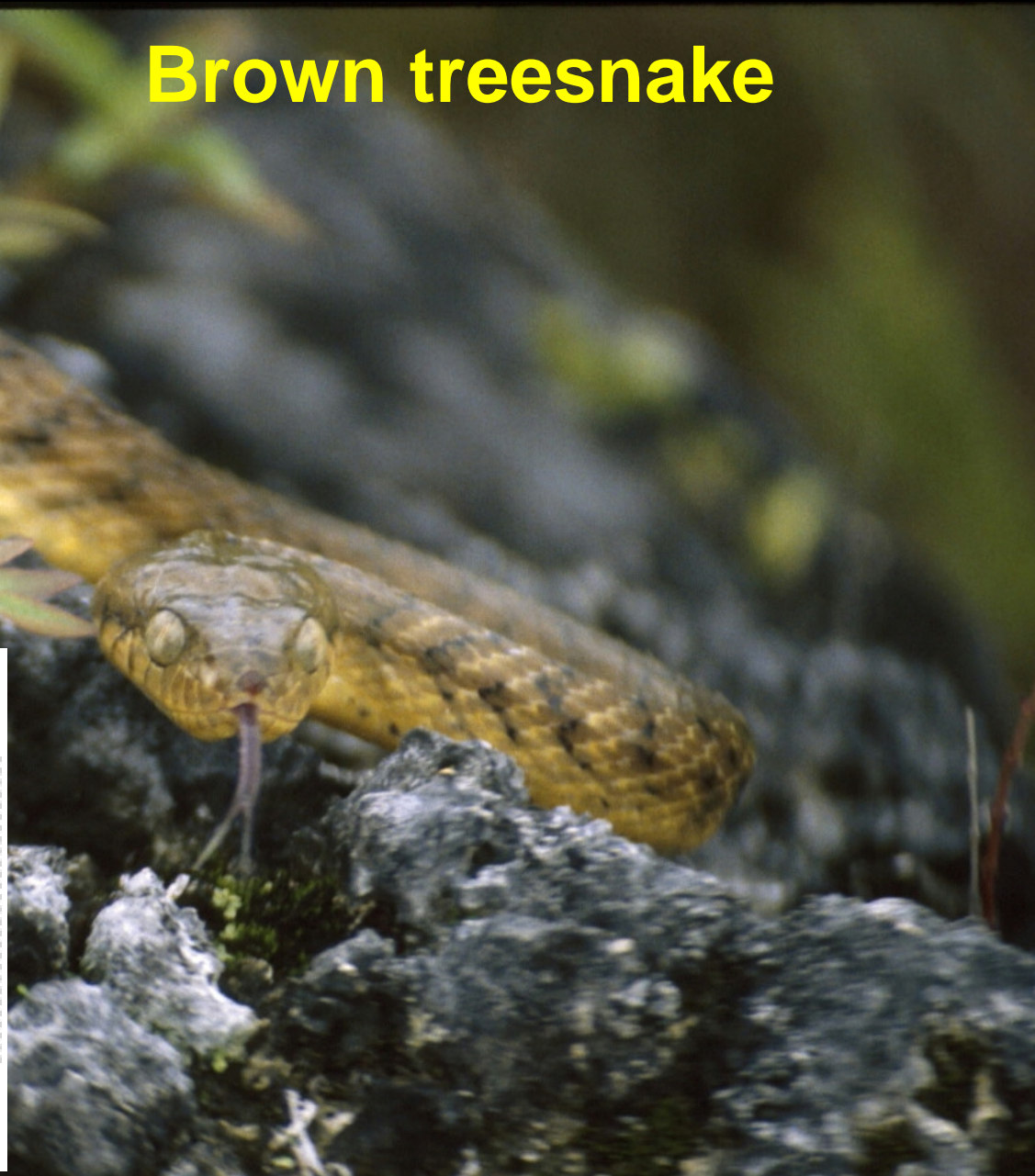
Smuggling



- Biological material is difficult to detect when on a person
- Normal security equipment will not readily detect biological materials
- Illegal pet trade is the primary reason for smuggling
- Hawaii, historically without any native reptiles and amphibians, now hosts 35 different species



Brown treesnake



Birds, Bats, and Lizards



Brown treesnake damages



Pets and Poultry



Ecological Changes



Snake Bites

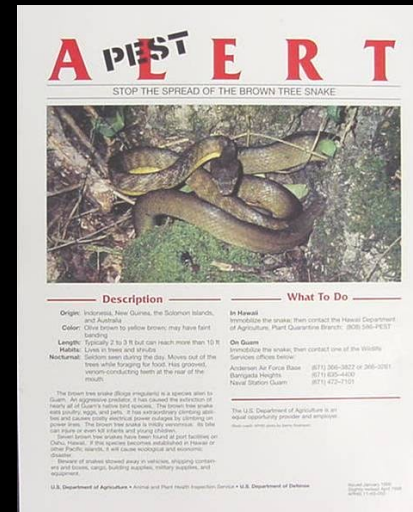
Dispersal Threat

Power Outages

**THE BROWN
TREESNAKE IS ONE OF
THE TOP
ENVIRONMENTAL
THREATS FACING
TROPICAL PACIFIC
ISLANDS**



BROWN TREESNAKE CONTAINMENT ON GUAM



**Over 70,000 BTS
have been
removed from
Guam's military
and commercial
ports of exit since
1994.**





Caribbean tree frogs



- Two species, *Eleutherodactylus coqui* and *E. planirostris*, are widely established in Hawaii
- Both species reproduce without a tadpole stage; therefore can live without permanent water source
- Disperse via ornamental plants and other cargo movements
- Coqui responsible for substantial economic losses in Hawaii, through reduced real estate values and noise disturbance
- *E. planirostris* is now established on Guam; *E. coqui* has arrived at least twice
- Coqui has essentially shut down the ornamental plant trade between Hawaii and Guam



Avian Influenza (Bird Flu)



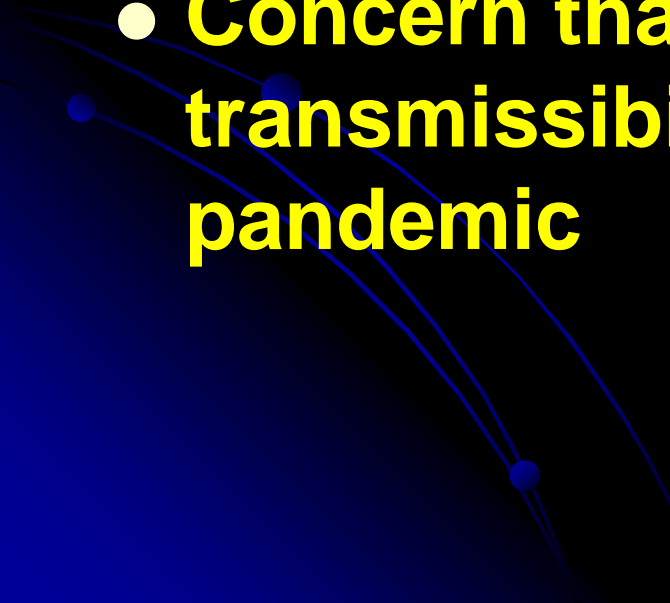
Avian Influenza (Bird Flu)

- **H5N1 first detected in Hong Kong in 1997**
- **Appears to be moving across the globe through the movement of migratory birds**
- **H5N1 has infected people through direct contact with infected birds (only domestic birds so far)**
- **H5N1 is not transmissible between humans (yet...)**

Avian Influenza (Bird Flu), con't

- Domestic birds, especially chickens, turkeys, ducks, and geese are extremely susceptible to H5N1
- Some mammals (cats, pigs) are known to be susceptible to H5N1
- Feral chickens are a potential vector to move the virus from migratory birds to domestic flocks

Humans and Avian Influenza

- **Transmission between birds and people is difficult**
 - **Usually through repeated direct contact with sick or dead bird**
 - **Concern that a mutation could change transmissibility and lead to global flu pandemic**
- 



Why is Micronesia a concern?

- **Asian migratory birds**
- **Large populations of feral chickens**
- **Popularity of fighting chickens**
- **Potential for illegal importation of infected animals from SE Asia**
- **Airports are congregation sites for many bird species of concern**

Closing Management Thoughts...

- **Civilian airports are primary entry points for invasive species**
- **Impacts occur on multiple levels, some of which are not well understood**
- **Governments typically do not respond proactively to invasive species threats, but...**
- **Most effective and least costly means is to prevent the establishment of invasive species**
- **Political will to keep at its source must exist for successful prevention**



Invasive Species Management Needs

- Awareness of threats
- Prevention
 - Adequate training
 - Capable of immediate response
 - The probability of finding any individual animal drops to near zero if not captured or contained immediately
 - Immediate reporting to appropriate resources



Questions?

USDA, APHIS, Wildlife Services
671.635.4400

CNMI, DLNR, DFW
670.664.6000

CNMI Brown treesnake hotline
670.28-SNAKE

Coqui hotline (Guam)
671.687.FROG

Guam Division of Aquatic and Wildlife Resources
671.735.3955

